

LONG

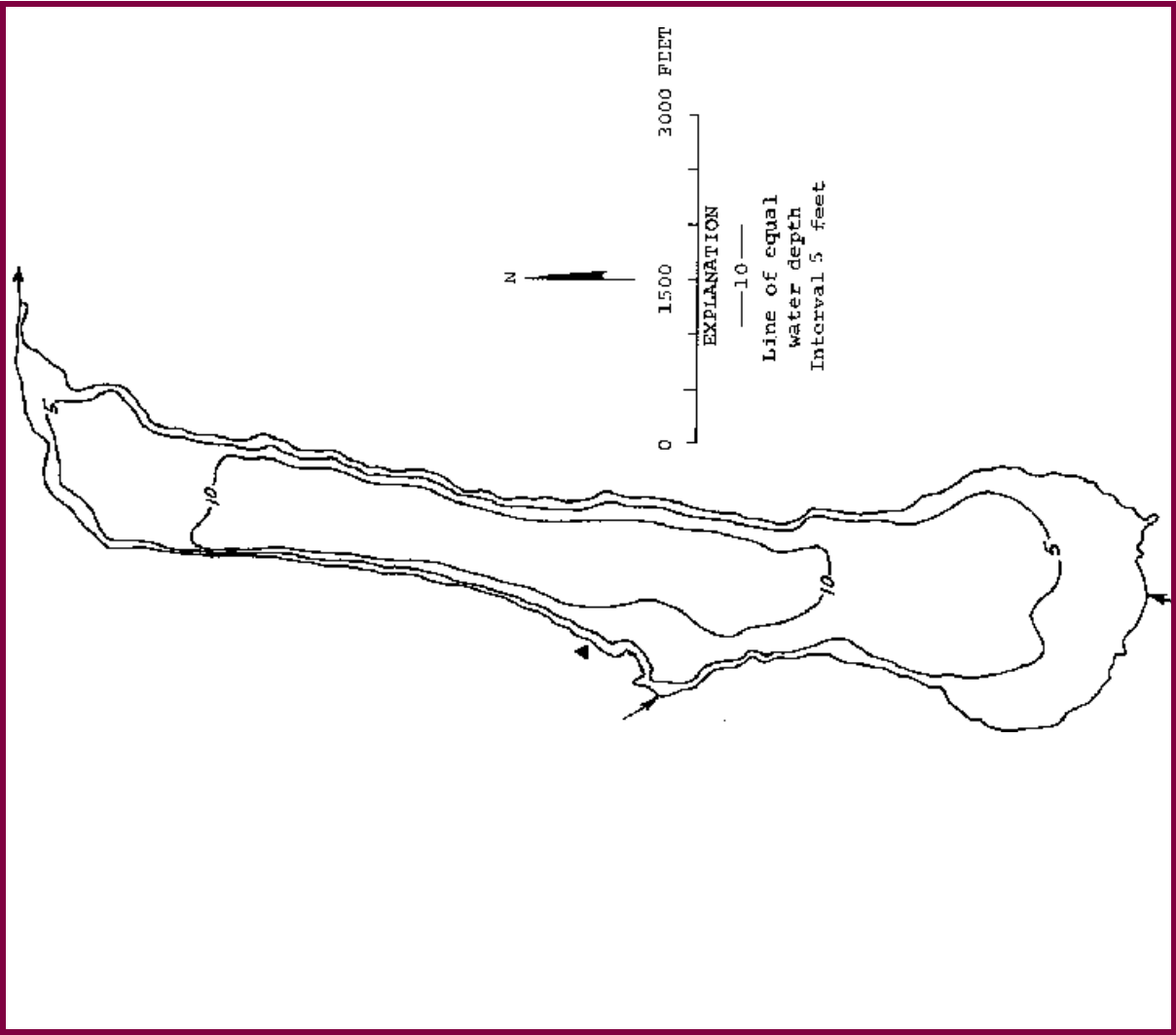
KITSAP County

Lake ID: LONKI1

Ecoregion: 2

Long Lake is located 3.5 miles southeast of Port Orchard. It is two miles long. The lake is fed principally by Salmonberry Creek, and drains via Curley Creek to Yukon Harbor.

Area (acres)	Maximum Depth (ft)	Mean Depth (ft)	Drainage (sq mi)	
339	12	6	9	
Volume (ac-ft)	Shoreline (miles)	Altitude (ft abv msl)	Latitude	Longitude
2180	5.07	118	47 28 58.	122 35 12.



Station Information

LONKII

Primary Station	Station # 1	latitude: 47 29 26.6	longitude: 122 35 17.4
	Description:	In approximate middle of lake, about 1000 feet northeast of launch	
Secondary Station	Station # 2	latitude: 47 28 39.5	longitude: 122 35 36.4
	Description:	In horizontal middle of lake approximately 2000 feet south of northern shore	

Trophic State Assessment for 1998

LONG

Analyst: KIRK SMITH

TSI_Secchi:	53	N
TSI_Phos:	54	
TSI_Chlor:	53	
Narrative TSI: ^a	E	

Long Lake in Kitsap County is a shallow, naturally eutrophic lake. Historically, Long Lake has been subjected to intensive studies and restoration efforts but we suspect that Long Lake is naturally eutrophic and will always be rich in nutrients without unreasonably extensive and expensive management. All the chlorophyll samples for the lake were well within the eutrophic range with the exception of the June sample. There were no user surveys distributed around Long Lake but the county closed the public swimming beach for a short time due to fecal contamination which they attributed to human sources (presumably swimmers). Fecal bacteria concentration from this study were unusually high for lakes. Also, the lake is notorious for its abundant macrophyte growth and algal blooms both of which have adversely affected primary contact uses in the past. Our habitat survey also confirmed the abundant macrophyte growth in the lake. The lake does have two noxious weeds, Brazilian elodea (*Egeria densa*) and Eurasian water milfoil (*Myriophyllum spicatum*). Zooplankton had a relatively large average size with cladocerans dominant. The abundant macrophyte growth may impair foraging by the large fish predators while at the same time enhancing the protective cover for salmon smolts. Historical data from 1973 suggests TP concentrations to be similar or perhaps even higher than concentrations detected in this study.

In summary, Long Lake appears to be naturally eutrophic. Beneficial uses do not appear to be impacted from the abundant nutrients considering the eutrophic state of the lake. Uses may suffer impacts from excessive aquatic plant growth although that growth may provide a protective nursery for coho salmon smolts. Also, reducing nutrients in the lake most likely would not reduce the plant biomass and may actually increase biomass should the decrease in algal concentrations allow for greater light penetration. Therefore, we recommend that the nutrient criterion be set at 34.7 ug/L, the mean total phosphorus concentration from this study plus an adjustment for inter-annual variability (mean = 29.6 ug/L + std. dev. = 5.1 ug/L).

^a E=eutrophic, ME=mesoeutrophic, M=mesotrophic, OM=oligomesotrophic, O=oligotrophic

Chemistry Data

LONG

Date	Time	Strata	Tot P (ug/L)	Tot N (mg/L)	TN:TP	Chloro- phyll (ug/L)	Fecal Col. Bacteria (#/100mL)	Hardness (mg/L)	Calcium (ug/L)	Turbidity (NTU)
Station 0										
8/19/1998		L					71			
		L					27			
9/23/1998		L					160			
		L					88			
Station 1										
6/10/1998		E	21.4	.367	17	5.7		40.3	8100	1.7
7/24/1998		E	28.3	.487	17	8.2				2.4 J
8/19/1998		E	39.3	.559	14	26.6				3.9
9/23/1998		E	28.1	.44	16	9.5				2.1
Station 2										
8/19/1998		E	35							
9/23/1998		E	26.3	.45	17	11.2				

Strata: L=lake surface, E=epilimnion, H=hypolimnion; Qualifier: J=Estimate, U=Less than

Watershed Survey

LONG

Survey Date: 9/23/1998

Land Uses (1 = Primary, 2 = Secondary, etc.)

☐ Agriculture (commercial, not hobby)☐ 1 Residential☐ Commercial, Industrial☐ Park, forest or natural☐ 2 Major transportation

Impervious surfaces (Roads and parking area): No Curbs

Observations (check mark denotes presence)

BMP's ☐

None needed at this time.

Odors ☐

None detected

Cattle ☐ Ducks ☐ Geese ☐

None

Fertilizers and weed killers appear to be used in residential or agriculture area ☒

Some fertilizers appear to be used on lawns around the lake.

Buffer zones around streams and wetlands ☒

Irrigation ☐

Survey Id: 90

Habitat Survey Summary Report

LONG

Data are averages of 10 Stations Surveyed

Date of Visit: 8/19/1998

Vegetation Type (Avg. only of sites w/ vegetation present; 1=coniferous, 3=deciduous)

Canopy Layer Avg:	1.8	Number of stations with canopy:	10
Understory Avg:	2.4	Number of stations with understory:	10

Percent Areal Coverage (0 = absent, 1 = <10%, 2 = 10-40%, 3 = 40-75%, 4 = >75%)

Canopy Layer:	trees > 0.3 m DBH	1.7
	trees < 0.3 m DBH	1.1
Understory:	woody shrubs saplings	1.9
	tall herbs, forbs grasses	0.5
Ground Cover:	woody shrubs seedlings	1.5
	herbs, forbs, grasses	1.3
	standing water or inundated veg	0.8
	barren or buildings	0.9
Substrate Type (within shoreline plot):	bedrock	0.0
	boulders	0.6
	cobble/gravel	1.0
	loose sand	2.0
	other fine soil/sediment	0.8
	vegetated	2.6
	other	0.0
Bank Features:	angle (0:<30; 1: 30-75; 2:nr vertical)	0.3
	vertical dist (M from wtrln to high wt):	0.2
	horiz. dist. (M from wtrln to high wt):	0.9

Human Influence (0 = absent, 1 = adjacent to or behind plot, 2 = present within plot)

buildings	0.8
commercial	0.0
park facilities	0.2
docks/boats	0.9
walls, dikes, or revetments	0.7
litter, trash dump, or landfill	0.0
roads or railroad	0.4
row crops	0.0
pasture or hayfield	0.2

orchard	0.0
lawn	1.1
other	0.2

Physical Habitat Characteristics

station depth (at 10 m from shore)	1.4
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Bottom Substrate (0 = absent, 1 = <10%, 2 = 10-40%, 3 = 40-75%, 4 = >75%)

bedrock	0.0
boulders	0.0
cobble	0.0
gravel	1.0
sand	1.6
silt	2.8
woody debris	0.2

Macrophyte Areal Coverage (0 = absent, 1 = <10%, 2 = 10-40%, 3 = 40-75%, 4 = >75%)

submergent	2.6
emergent	0.7
floating	1.0
total weed cover	2.9

Do macrophytes extend lakeward (-1 = yes, 0 = no)	-1.0
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Fish Cover (0 = absent, 1 = Present but sparse, 2 = moderate to heavy)

aquatic weeds	1.9
snags	0.0
brush or woody debris	0.8
inundated live trees	0.3
overhanging vegetation	1.0
rock ledges or sharp dropoffs	0.0
boulders	0.0
human structures	1.1

Zooplankton Report

LONKI1

Date 6/10/1998 Station: 1
 Sample ID 25

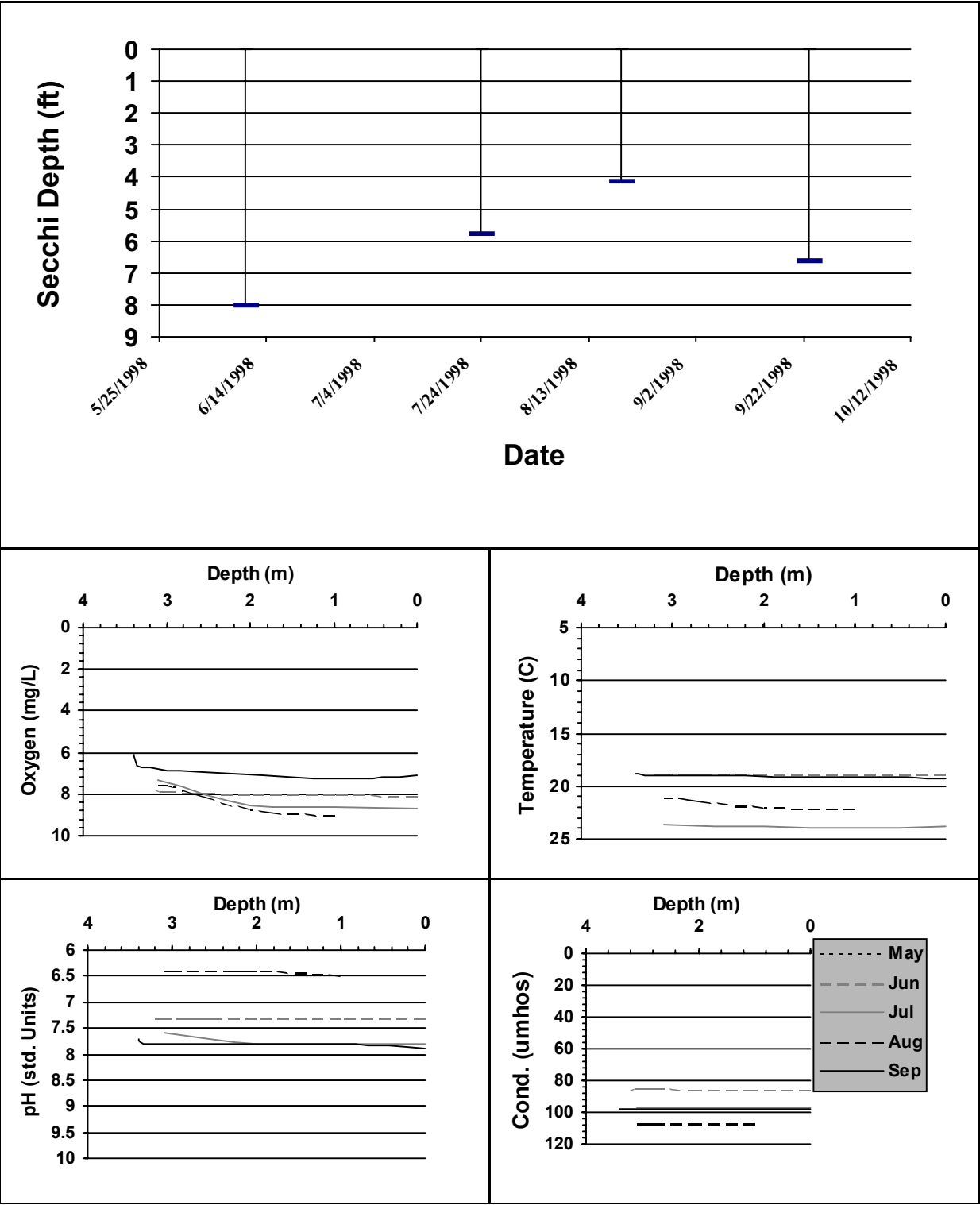
Number of organisms measured: 59

Group	Percent	Group	Percent
Cladoceran	83.1%	Small < 1mm	72.9%
Copepod	16.9%	Large >= 1mm	27.1%
Other		Ratio of large to Small:	0.37
		Average size (mm):	0.75

Secchi Depth and Profile Graphics

Station: 1

LONKI1



Secchi Data and Field Observations

LONG

Date	Time	Temp- erature (F)	Secchi (ft)	Color (1-greens, 11-browns)	Bright- ness (pct)	Wind (1-none, 5-gusty)	Rainfall (0-none, 5-heavy)	Aesthetics (1-bad, 5- good)	Swimming (1-poor, 5- good)	Geese (#)	Waterfowl (besides geese #)	Boats- Fishing (#)	Boats- Skiing (#)
Station 1													
6/10/1998			8	8	100			3	3	0	0	0	1
	Sampler: SMITH			Remarks: SECCHI DIPS CONDUCTED WITH KITSAP COUNTY HEALTH FOR QC PURPOSES. 229 HOMES ON LAKE. WSHD 15% LOGGING, 85% RESIDENTIAL; SHORELINE 35% NATURAL VEGETATION									
7/24/1998			5.78	6	100			2	1	17	5	1	0
	Sampler: SMITH			Remarks: 1 EAGLE OBSERVED. 2 PEOPLE FISHING AT BOAT LAUNCH. MANY NEW HOMES ALONG SHORELINE. The Oxygen result is qualified as an estimate due to postcalibration failing QA/QC requirements.									
8/19/1998			4.13	3	0	2		3	2	0	0	0	0
	Sampler: SMITH			Remarks: ABUNDANT ALGAL BLOOM. APPEARS TO BE APHANIZOMENON. BRAZILIAN ELODEA THROUGHOUT BOTTOM FROM SHORE TO SHORE									
9/23/1998			6.6	2	0	1		3	2	58	165	0	2
	Sampler: SMITH			Remarks: FEC#1 AT PUB SWIM BEACH, #2 AT BOAT LAUNCH. ONE BALD EAGLE OBSERVED. The Conductivity and Oxygen results are qualified as an estimate due to postcalibration failing QA/QC requirements.									